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somewhat obscured by olive green tips to the feathers, most pronounced on occiput and nape where the ground color is entirely concealed. This differs but slightly from the plumage of winter males but is not apparent in a series of early July specimens, including two taken on same date. Were this the only difference I would not deem it worthy of especial mention, as it may be a common plumage of the non-breeding bird, but there is a decided difference on the under parts. The breast is lemon yellow, contrasting sharply with the black of the throat and blending into yellowish white on the abdomen and gray on sides. The entire plumage is soft, silky and bright, while in normal examples taken at this season it is rough, worn and dull. The sperm ducts were the only evidence of sex I could discover on dissection. It was undoubtedly a non-breeding bird. — J. CLAIRE WOOD, *Detroit, Michigan*.

RECENT LITERATURE.

Stephens's 'Life Areas of California.'—In a paper¹ of eight pages, illustrated with a map, Mr. Stephens summarizes briefly the principal causes controlling the geographical distribution of life, and then proceeds to a detailed, but also brief, consideration of the faunal areas of California, which presents a greater diversity of physical conditions than any other well known region of similar size. With a latitudinal extent of 600 miles, it varies in altitude from below sea level to elevations of nearly 15,000 feet. The north and south trend of the high mountain ranges abstracts the moisture from the air as the winds from the sea pass over them, leaving beyond in the interior areas of great aridity, the annual rainfall in different parts of the State ranging from 80 inches in the northwestern part to 3 or 4 inches in the southeastern part. Under these varied conditions the life zones of the State range from the arctic to the subtropical, the former, however, occupying only limited areas on the higher mountain crests and the latter restricted to the bottom lands of the Colorado River.

Mr. Stephens's major divisions are as currently recognized, the special purpose of the paper being the definition of the minor faunal areas, or 'Faunas,' of which he provisionally defines 17. These are:

1. *Humboldt Fauna*,—a narrow coast belt extending from Oregon south to San Francisco Bay. Transition.
2. *Shasta Fauna*,—the region about Mount Shasta. Transition.
3. *Modoc Fauna*,—the northeastern part of the State, north of Honey Lake, and east of Mount Shasta. Transition.
4. *Sacramento Fauna*,—Sacramento-San Joaquin Valleys. Lower Austral.

¹ Life Areas of California. By Frank Stephens. Trans. San Diego [California] Society of Nat. Hist., Vol. I, No. 1, 1905, pp. 1-8, with map.

5. *Foothill Fauna*,—a belt of the upper Austral along the western lower slope of the Sierra Nevada.

6. *Sierra Nevada Fauna*,—the transition life zone of the Sierra Nevada mountains.

7. *California Alpine Fauna*,—higher parts of the Sierra Nevada. Boreal.

8. *Clear Lake Fauna*,—"a broken region of moderate extent," bounded by the Humboldt, Shasta, and Sacramento Faunas. Upper Austral.

9. *San Luis Obispo Fauna*,—bounded by the Sacramento, Santa Cruz, and San Jacinto Faunas and the Pacific Ocean. Upper Austral.

10. *Santa Cruz Fauna*,—a narrow coast belt, extending from San Francisco Bay south to a little below Point Sur. Transition.

11. *San Jacinto Fauna*,—interior of southern California, south of the San Luis Obispo Fauna and west of the Colorado Desert. Upper Austral.

12. *San Diego Fauna*,—southeastern California. Lower Austral.

13. *San Bernardino Fauna*,—that portion of the Transition zone lying south of latitude 35°.

14. *California Arctic Fauna*,—the summits of the higher peaks of the Sierra Nevada.

15. *Mojave Fauna*,—Mojave Desert. Lower Austral.

16. *Colorado Valley Fauna*,—the Colorado River bottom lands. Sub-tropical.

17. *Island Fauna*,—the islands off the southern coast of California.

These several faunas, numbered as above in the key to the map, fall into the several life zones as follows :

Arctic.

California Arctic Fauna.

Boreal.

California Alpine Fauna.

Transition.

Modoc Fauna.

Humboldt Fauna.

Sierra Nevada Fauna.

Santa Cruz Fauna.

Mount Shasta Fauna.

San Bernardino Fauna.

Upper Austral.

Foothill Fauna.

San Luis Obispo Fauna.

Clear Lake Fauna.

San Jacinto Fauna.

Island Fauna.

Lower Austral.

Sacramento Fauna.

Mojave Fauna.

San Diego Fauna.

Subtropical.

Colorado Valley Fauna.

While the major life zones of California were defined in a general way some years ago by Dr. Merriam, and also by Mr. Keeler, and some of the minor areas by Dr. Grinnell in 1902,¹ this appears to be the first attempt to delimit and name the Faunas of the State, as such, the faunal areas, or "Isohumic Areas," of Grinnell, ten in number; being climatic rather than faunal. Mr. Stephens's extended field experience in California has made him familiar with the faunal as well as the climatic conditions prevailing over a large part of the State, so that his paper on its faunal areas is based largely on personal knowledge. It is to be regretted, however, that he did not give more space to details in defining his faunal areas, and also that they were not more formally set off typographically in the text.—J. A. A.

Chapman on the Life History of the American Flamingo.²—In this paper of twenty-five pages, with numerous half-tone illustrations, from photographs of the living birds, Mr. Chapman has presented the scientific results of his studies of the great Bahama Flamingo rookeries in May, 1902, and May and June, 1904. An earlier popular account of the same observations was given by him in 'The Century Magazine' for December, 1904, and also some notes on the habits of the young birds in 'Bird-Lore' (Vol. VI, pp. 193-198). Also in 'The Auk' for January, 1905 (XXII, pp. 107-109), in our account of the 'Flamingo Group' recently placed on exhibition in the American Museum of Natural History, some reference is made to his successful trip to the Bahamas for Flamingoes in 1904. The present paper gives a systematic and very full account of the life-history of the species as observed under the most favorable conditions. He remained at the rookery from June 7 to June 14, studying the birds at close-range during the height of the breeding season. By erecting skilfully devised 'blinds' he was able to established himself in the very midst of the great rookery, "without apparently arousing the birds' suspicions," from which the colony could be observed and photographed as a whole, or the individual birds, young and old, "studied from as near as six feet."

After a brief summary of the work of previous observers, he proceeds to give a detailed account of the habits of the birds, including the time of nesting, the character of the nesting ground, the nest and its construction, the eggs, the period of incubation, the habits of the young birds and of the adults, including their notes and food; while the reproduced photographs show the rookery when the birds are in repose (incubating and

¹ Check-List of California Birds. Pacific Coast Avifauna No. 3, June, 1902, pp. 6, 7, and 2 maps.

² A Contribution to the Life History of the American Flamingo (*Phaenicopterus ruber*), with Remarks upon Specimens. By Frank M. Chapman. Bull. Am. Mus. Nat. Hist., XXI, 1905, pp. 53-77, with 15 text figures. June 15, 1905.